

ABSTRACT OF THE DISCLOSURE

This invention provides a pinch valve having a pinch region defined by a pair of rotating pinch elements. These pinch elements define a variable profile that substantially surrounds the entire circumference of a tube in the pinch region and that thereby ensures

5 that the tube is always returned to the desired opening size at all valve adjustment settings in a range from fully open to fully closed. More particularly, the pinch elements are provided with a pinch region that defines a surface geometry that includes a continuously variable-length (ramping) linear segment, disposed at a continuously variable depth (ramping from full open to fully pinched), that pinches the walls into a pair of opposed

10 parallel lines throughout the majority of their rotational movement/adjustment range.

The pinch elements also include upper and lower variably sized fillets (typically curved) on each side of the linear segment that capture the curved top and bottom of the tube, adjoining the pinched walls, so as to force the top and bottom back into a desired shape despite the presence of any permanent deformation of the walls. Overall, the pinching

15 region is adapted to conform to the prevailing outline of the tube at the pinch point throughout the range of pinch settings. In an illustrative embodiment, the pinch elements counter-rotate, so that parallelism between opposing pinched walls is enhanced.